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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,002	01/15/2002	Mark Pavier	IR-1837	5495

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EXAMINER

CHU, CHRIS C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 04/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/050,002

Applicant(s)

PAVIER, MARK

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Oath/Declaration***

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The photocopied declaration is illegible therefore a new clean declaration is needed.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: the reference characters “S” in Fig. 2, “S1, S2, G1 and G2” in Fig. 3 and “G” in Fig. 6 are not disclosed in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first surfaces of the first and second die each contains a power electrode to be connected to the pad section and to one another as presented in claim 9 and the second die is coupled to selected electrodes of the first die as

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presented in claim 11 must be shown or the features canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect may be deferred until after the examiner has considered the proposed drawing correction. Failure to timely submit the proposed drawing correction will result in the abandonment of the application.

#### ***Claim Objections***

5. Claims 1 and 9 are objected to because of the following informalities:

In claim 1, line 7, "spacial" is an unknown word.

In claim 9, line 2, "contain" should be --contains--.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1 ~ 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it can not be determined what applicant regards as “the first electrodes of each of the first and second die being fixed to and in surface to surface connection with the first and second opposite surfaces respectively of the pad section” and “the first and second die being in spatial overlapping relationship with respect to one another.” Further, “the first electrodes” and “the surface” lack antecedent basis.

In claims 3 and 4, “the one surface” lacks antecedent basis.

### *Claim Rejections - 35 USC § 102*

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1 ~ 4, 6, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakanishi et al.

Regarding claim 1, Nakanishi et al. discloses in Fig. 12 a semiconductor device package comprising:

- a lead frame (110) having a conductive pad section (101) with first and second opposite surfaces and

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- a plurality a coplanar pin sections (105),
- a first (112) and at least a second (111) semiconductor die, each having first and second opposite surfaces and each having a plurality of electrodes (113 and 114);
- the first electrodes (113 and 114) of each of the first and second die being fixed to and in surface to surface connection with the first and second opposite surfaces respectively of the pad section;
- the first (112) and second (111) die being in spatial overlapping relationship with respect to one another; and
- an insulation housing (120) enclosing the die and the pad section;
- the pin section extending through the surface of the insulation housing to its exterior.

Regarding claims 2, 6 and 7, Nakanishi et al. discloses in Fig. 12 selected ones of the plurality of electrodes are connected to selected ones of the plurality of pins within the insulation housing.

Regarding claim 3, Nakanishi et al. discloses in Fig. 12 a conductive adhesive (171, the top) for connecting the one surface of the first die to the first surface of the pad.

Regarding claim 4, Nakanishi et al. discloses in Fig. 12 a second adhesive (171, the bottom) for connecting the one surface of the second die to the second surface of the pad.

Regarding claim 11, since Nakanishi et al. does not limit the first and second die to any particular or specific device, his/her disclosure encompasses all well known die's including "MOSgated power devices and a control IC." Further, Nakanishi et al. discloses in Fig. 12 the second die is coupled to selected electrodes of the first die.

*Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Adachi et al.

Regarding claim 5, Nakanishi et al. discloses the claimed invention except for the second adhesive being electrically insulative. Adachi et al. teaches in column 6, lines 41 ~ 46 an electrically insulative material for an adhesive layer. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the electrically insulative material of Adachi et al. as the second adhesive layer in the device of Nakanishi et al. in order to provide a connection and fixed mounting of the first semiconductor chip as taught by Adachi et al. in column 4, lines 23 ~ 26.

Regarding claim 8, Nakanishi et al. discloses in Fig. 12 selected ones of the plurality of electrodes are connected to selected ones of the plurality of pins within the insulation housing.

12. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. in view of Kinzer.

Nakanishi et al. does not disclose a MOSgated power device and a power electrode on the first surfaces of the die. Kinzer teaches in column 4, lines 29 ~ 34 the die being MOSgated power device; and wherein the first surfaces of the die containing a power electrode. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the MOSgated power devices and the power electrode of Kinzer as the first and second die and the electrode in the device of Nakanishi et al. in order to increase thermal connection of the dice as taught by Kinzer in column 3, lines 29 ~ 34. Further, the phrase “ to be connected to the pad section and to one another” is an intended use language which does not differentiate the claimed apparatus from Nakanishi et al. and Kinzer.

Regarding claim 10, Nakanishi et al. discloses in Fig. 12 the first and second die are fixed to the pad section by a conductive adhesive (171).

### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mathew et al., Akram, Jeng et al., Han et al., Huang et al., Michii, Kuhn, Casto, Inaba et al. and Tsubonoya disclose a lead frame and semiconductor package.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu  
Examiner  
Art Unit 2815

c.c.  
April 8, 2002

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a large, looping initial 'E'.

EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800